

Paralytic Shellfish Poisoning

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To identify whether the source of transmission is a major public health concern (e.g., a commercial shellfish product or recreational harvest area) and to prevent further transmission from such sources.
2. To identify others who shared the exposure and educate them regarding symptoms of paralytic shellfish poisoning to facilitate rapid diagnosis.
3. When the source is a risk to only a few individuals (e.g., shellfish harvested from an area closed to harvesting), to inform those individuals how they can reduce their risk of future exposure.

B. Legal Reporting Requirements

1. Health care providers: **immediately notifiable to local health jurisdiction.**
2. Hospitals: **immediately notifiable to local health jurisdiction.**
3. Laboratories: no requirements for reporting.
4. Local health jurisdictions: **immediately notifiable to the Washington State Department of Health (DOH) Communicable Disease Epidemiology Section (CDES) (1-877-539-4344).**

C. Local Health Jurisdiction Investigation Responsibilities

1. **Immediately** begin an investigation to determine the likelihood of the diagnosis and potential sources of exposure.
2. Notify CDES (206-418-5500 or 1-877-539-4344) or the DOH Shellfish Program (360-236-3330) of potential sources of exposure and prevent consumption of remaining potentially contaminated shellfish.
3. Facilitate the collection and transport of potentially contaminated shellfish for testing at DOH Public Health Laboratories.
4. Report all *confirmed* and *probable* cases to CDES (see definitions below) using the standard case report form (available at: <http://www.doh.wa.gov/notify/forms/psp.doc>).

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Paralytic shellfish poisoning (PSP) is caused by ingesting shellfish containing saxitoxins. Saxitoxins are heat-stable toxins produced by phytoplankton of the *Alexandrium* species and other dinoflagellates. Molluscan shellfish (those that have a hinged shell such as clams, mussels, oysters, geoduck, etc.) are filter feeders that ingest the phytoplankton and concentrate the toxins in their systems. The concentration of saxitoxins in shellfish often increases when warm temperatures, sunlight and nutrient-rich water cause plankton to rapidly reproduce or “bloom.” “Red tides” or reddish discoloration of the water during an

algae bloom are not necessarily associated with increased levels of saxitoxins and toxic algae blooms can occur without discoloration of the water. Blooms of the causative *Alexandrium* species occur several times each year, primarily from April through October. Once shellfish become toxic, most species will remain toxic for several weeks after the bloom subsides. However, some shellfish species including butter clams can remain toxic for more than a year.

B. Description of Illness

Paralytic shellfish poisoning presents with neurologic symptoms frequently accompanied by gastrointestinal symptoms. Paresthesias of the mouth and extremities are the initial and most common neurologic complaint. In severe cases, ataxia (loss of coordination), dysphonia (difficulty speaking), dysphagia (difficulty swallowing) and total muscle paralysis with respiratory arrest and death may occur (if supportive care is not received). Symptoms usually resolve within a few days and recovery is complete.

C. Paralytic Shellfish Poisoning in Washington State

In recent years, DOH has received 0–7 reports of paralytic shellfish poisoning (PSP) annually. Throughout the year, the DOH Shellfish Program routinely tests Washington shellfish beds for the presence of marine biotoxins. Areas are closed to harvesting when toxin levels in shellfish exceed 80 µg/100 g. The DOH 24-hour PSP hotline (1-800-562-5632) provides information on shellfish harvest areas closed due to marine biotoxins. Most paralytic shellfish poisoning cases occur in individuals or small groups gathering shellfish from areas closed to recreational (non-commercial) shell fishing.

D. Reservoirs

Paralytic shellfish poisoning is particularly common in bivalve mollusks (i.e., clams, oysters) harvested from colder waters above 30N and below 30S latitude, but may occur in tropical waters as well. In the United States, paralytic shellfish poisoning is primarily a problem in Alaska, California, Washington, and the New England states.

E. Modes of Transmission

Paralytic shellfish poisoning is acquired by eating shellfish containing the toxin. *Cooking or freezing does not inactivate the toxin.*

F. Incubation Period

Symptoms occur minutes to hours after eating contaminated shellfish.

G. Period of Communicability

Paralytic shellfish poisoning is not transmitted from person to person.

H. Treatment

Treatment is supportive and may require intensive care and ventilatory support.

3. CASE DEFINITIONS

A. Clinical Criteria for Diagnosis

Onset of neurological symptoms (paresthesias, ataxia, cranial nerve abnormalities, paralysis, etc.) with or without gastrointestinal symptoms within minutes to hours following consumption of shellfish.

B. Laboratory Criteria for Diagnosis

1. Identification of saxitoxin in epidemiologically implicated food.

C. Case Definition

1. Probable: A clinically compatible case that is not laboratory confirmed and not epidemiologically linked to a confirmed case.
2. Confirmed: A case that is laboratory confirmed, or that meets the clinical case definition, is not laboratory confirmed, and is epidemiologically linked to a confirmed case.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Diagnosis

Tests are not readily available to detect saxitoxin in human specimens. Therefore, the best way to confirm the diagnosis of paralytic shellfish poisoning in a patient with compatible clinical symptoms is to test epidemiologically implicated shellfish for saxitoxins.

B. Services Available at the Washington State Public Health Laboratories

DOH Public Health Laboratories test for saxitoxins in shellfish. Consult CDES or the DOH Shellfish Program to arrange for testing at PHL.

C. Specimen Collection

Instructions for handling food specimens will be found in the PHL Directory of Services, under Marine Biotoxins (page 33–35):

http://www.doh.wa.gov/EHSPHL/PHL/Forms/directory_of_services.pdf.

5. ROUTINE CASE INVESTIGATION

Interview the case and others who may be able to provide pertinent information.

A. Evaluate the Diagnosis

Review the clinical presentation and determine the likelihood of the diagnosis. The likelihood of the diagnosis will help to determine how aggressively to recall shellfish while confirmatory tests are pending.

B. Identify Potential Sources of Infection

Ask the patient about shellfish consumed in the hours prior to onset. Collect details about the type of shellfish consumed, site of harvest/purchase, and date of harvest/purchase. Report the information to the DOH Shellfish Program immediately (360-236-3330).

C. Identify Potentially Exposed Persons

Immediately identify persons who shared the same exposure as the patient and educate them about symptoms and where to obtain treatment if symptoms develop.

D. Environmental Evaluation

Perform a trace-back investigation to determine where the implicated shellfish were harvested. Collect information about the supplier and harvest site of the shellfish. Obtain legally required shellfish tags from retail sites. If possible, obtain shellfish samples for testing at DOH Public Health Laboratories.

6. CONTROLLING FURTHER SPREAD:**A. Infection Control Recommendations**

None, the disease is not spread from person to person.

B. Case Management: Case follow up is not needed.

C. Contact Management: None, the disease is not spread from person to person.

D. Management of Other Exposed Persons

It is urgent to educate persons who shared an exposure with the case about symptoms and where to obtain treatment if symptoms develop.

E. Environmental Measures

Prevent further consumption of shellfish from the same harvest area until further information is gathered. This is done by putting a hold on shellfish from the same lot in a restaurant or grocery store. The DOH Shellfish Program is responsible for recalling shellfish harvested from the same site if needed.

7. MANAGING SPECIAL SITUATIONS

Determine if the case is associated with or potentially associated with an outbreak.

If an outbreak is suspected, notify CDES immediately: 1-877-539-4344.

8. ROUTINE PREVENTION

A. Immunization Recommendations: none

B. Prevention Recommendations

1. Before harvesting shellfish, consult the 24 hour PSP Hotline 1-800-562-5632 or the DOH website: <http://ww4.doh.wa.gov/gis/mogifs/biotoxin.htm> for information on shellfish harvest areas closed due to marine biotoxins.
2. Biotoxins are not destroyed by cooking or freezing.

ACKNOWLEDGEMENTS

This document is a revision of the Washington State Guidelines for Notifiable Condition Reporting and Surveillance published in 2002 which were originally based on the Control of Communicable Diseases Manual (CCDM), 17th Edition; James Chin, Ed. APHA 2000. We would like to acknowledge the Oregon Department of Human Services for developing the format and select content of this document.